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PCT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year)
07 June 2001 (07.06.01)

International application No.
PCT/US99/23338

Applicant's or agent's file reference
DN1999-216-PCT

International filing date (day/month/year)
06 October 1999 (06.10.99)

Priority date (day/month/year)

Applicant

ROONEY, Timothy, Michael

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
09 April 2001 (09.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Olivia TEFY

Telephone No.: (41-22) 338.83.38

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference DN1999-216-PCT	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/US 99/ 23338	International filing date (day/month/year) 06/10/1999	(Earliest) Priority Date (day/month/year)
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

US 99/23338

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60C11/04 B60C11/13 //B60C121:00,B60C107:00,B60C107:02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 574 857 A (BEEGHLY RICHARD M ET AL) 11 March 1986 (1986-03-11) column 5, line 40 -column 6, line 14; claims; figures 1-4 column 3, line 46 -column 4, line 10 ----	1,8
X	GB 1 236 335 A (KLEBER-COLOMBES) 23 June 1971 (1971-06-23) page 1, left-hand column, line 37 -right-hand column, line 83; claims 1-4; figures page 2, left-hand column, line 16 - line 32 ----	1,4
X	FR 2 201 193 A (KLEBER COLOMBES) 26 April 1974 (1974-04-26) the whole document ----- -/-	1,4

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 May 2000

Date of mailing of the international search report

06/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Baradat, J-L

INTERNATIONAL SEARCH REPORT

International Application No

/US 99/23338

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 021 049 A (FIRESTONE TIRE & RUBBER C0) 28 November 1979 (1979-11-28) page 1, right-hand column, line 76 - line 82 ---	1
A	WO 93 21028 A (ASHAKOVA NATALYA IVANOVNA ;OGNEVA ELENA GEORGIEVNA (RU); SHPILKO A) 28 October 1993 (1993-10-28) figures 15-21 ---	1,3
A	US 5 377 734 A (KLEIN GARY G ET AL) 3 January 1995 (1995-01-03) ---	2,5,7
A	WO 98 03356 A (GOODYEAR TIRE & RUBBER ;ROONEY TIMOTHY MICHAEL (US)) 29 January 1998 (1998-01-29) cited in the application ---	1,7,8
A	US 5 259 429 A (HARMS MARK J) 9 November 1993 (1993-11-09) cited in the application column 6, line 63 -column 7, line 4; figure 8 ---	1-3,7
A	US 5 375 640 A (HARMS MARK J) 27 December 1994 (1994-12-27) cited in the application -----	1,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/US 99/23338

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4574857	A	11-03-1986	AU 566254 B AU 4931285 A CA 1234344 A GB 2166694 A,B ZA 8508119 A	15-10-1987 15-05-1986 22-03-1988 14-05-1986 25-06-1986
GB 1236335	A	23-06-1971	BE 728784 A CH 479413 A DE 1908257 A FR 1573943 A LU 58046 A NL 6902486 A,B	21-08-1969 15-10-1969 11-09-1969 11-07-1969 18-09-1969 26-08-1969
FR 2201193	A	26-04-1974	NONE	
GB 2021049	A	28-11-1979	DE 2916802 A ES 480655 A FR 2425952 A IT 1165011 B PT 69588 A SE 7904309 A	22-11-1979 16-01-1980 14-12-1979 22-04-1987 01-06-1979 19-11-1979
WO 9321028	A	28-10-1993	NONE	
US 5377734	A	03-01-1995	WO 9311951 A	24-06-1993
WO 9803356	A	29-01-1998	AU 7007196 A EP 0918653 A US 6021829 A	10-02-1998 02-06-1999 08-02-2000
US 5259429	A	09-11-1993	US 5375640 A	27-12-1994
US 5375640	A	27-12-1994	US 5259429 A	09-11-1993

PATENT COOPERATION TREATY

RECEIVED

JUN 12 2000

GOODYEAR TIRE & RUBBER COMPANY
2000-07-15

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
THE GOODYEAR TIRE & RUBBER COMPANY
Department 823
Attn. KING, D.
1144 East Market Street
Akron, Ohio 44316-0001
UNITED STATES OF AMERICA

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year)	06/06/2000
Applicant's or agent's file reference DN1999-216-PCT	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US 99/ 23338	International filing date (day/month/year)
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.	

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90b.1 and 90b.3, respectively, before the completion of the technical preparations for International publication.

Within 19 months from the priority date, a demand for International preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

OK
6/19/00

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Amélie Möller
--	---

JUN 13 2000

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference DN1999-216-PCT	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/US 99/ 23338	International filing date (day/month/year) 06/10/1999	(Earliest) Priority Date (day/month/year)
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

PATENT COOPERATION TREATY

RECEIVED

DEC 17 2001

GOODYEAR PATENT
& TRADE MARK DEPT.

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

KING, D.
THE GOODYEAR TIRE & RUBBER COMPANY
Department 823
1144 East Market Street
Akron, Ohio 44316-0001
ETATS-UNIS D'AMERIQUE

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing (day/month/year)	10.12.2001
-------------------------------------	------------

Applicant's or agent's file reference DN1999216PCT	IMPORTANT NOTIFICATION
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International application No. PCT/US99/23338	International filing date (day/month/year) 06/10/1999	Priority date (day/month/year) 06/10/1999
---	--	--

Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.
--

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

*OK
Seen
WFK 12/20/01*

Name and mailing address of the IPEA/	Authorized officer
---------------------------------------	--------------------

 European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	BON, L Tel. +49 89 2399-2961
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference DN1999216PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/23338	International filing date (<i>day/month/year</i>) 06/10/1999	Priority date (<i>day/month/year</i>) 06/10/1999
International Patent Classification (IPC) or national classification and IPC B60C11/04		
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the report

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 09/04/2001	Date of completion of this report 10.12.2001
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>	Authorized officer Buergo, J Telephone No. +49 89 2399 8884



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/23338

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1,3-11	as originally filed			
2,2a	as received on	22/10/2001	with letter of	18/10/2001

Claims, No.:

1-8	as received on	22/10/2001	with letter of	18/10/2001
-----	----------------	------------	----------------	------------

Drawings, sheets:

1/6-6/6	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/23338

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

2. Citations and explanations
see separate sheet

V. Reasoned statement

2. Citations and explanations

- 2.1** Document US-A-4 574 857 (D1), which is considered to represent the most relevant state of the art, discloses an off-the-road tire showing all the features of the preamble of claim 1.

The object of the present invention seems to be the improvement of the overall soil flow through the discharge channels, thus making the lugs more efficient in wet or mud traction.

This aim appears to be achieved by means of the traction elements of the characterizing portion of claim 1. Their location is neither known from nor suggested by the available prior art documents. The subject-matter of claim 1 appears therefore to meet the requirements of Article 33(3) PCT.

- 2.2** Claims 2 to 8, as dependent on claim 1, would also meet the requirements of Article 33(3) PCT regarding inventive step.

A problem commonly associated with these tapered knobs is that, while they resist expulsion of mud in some cases, they can actually clog the tread with mud in some clay-based soils.

5 A secondary problem is that the knobs have a radially outer surface area that is so small that, when placed in contact with a firm soil, the knobs tend to wear very quickly providing little or no tread wear enhancement.

A third problem is that the conical shape limits the utility of the knobs. Such knobs mainly a soil penetrating cleat without any meaningful soil biting edges to assist in traction
10 enhancement.

The most relevant prior art document is U.S. 4,574,857, which has the features recited in the preamble of claim 1.

An object of the present invention is to provide reduced height tread elements that provide a means for soil flow path diverting and increased traction edges for improved traction.

15 Another object of the invention is to provide the reduced height tread elements in a configuration that provides additional tread wearing surfaces while improving off-the-road traction.

A further object of the invention is to improve cornering stability by increasing the number of lug edges.

20 Disclosure of the Invention

Summary of the Invention

An off-the-road tire (10) having a radially outer tread (12) having a plurality of elongated lugs (40, 42) is disclosed. The elongated lugs (40, 42) have a maximum tread depth D as measured from a radially outer surface of the elongated lugs (40, 42) inwardly to an inner
25 tread surface (13).

The off-the-road tire (10) has a plurality of tread elements (80) interposed between the elongated lugs (40, 42). The tread elements (80) have three or more sides (83, 84, 85 and 86) extending from the inner tread surface (13) to a radially outermost surface (82), the radially outermost surface (82) have a maximum depth d, d being less than D and, wherein at least one
30 side of the tread elements (80) is oriented substantially parallel to an adjacent lug (40 or 42). The traction element (80) in a preferred embodiment additionally has at least one side (83, 84, 85 or 86) having a concave curvature. The concave curvature provides a means for redirecting or diverting the soil flow path when the tire is used in sloppy soil or snow.

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The tread element (80) has one or more sides (83, 84, 86 and 87) radially inclining at an angle β , β being equal to or greater than 8° .

CLAIMS

13 Rec'd PGT/PTO 18 FEB 2002

1. An off-the-road tire (10) having a radially outer tread (12) having a plurality of elongated lugs (40, 42), the elongated lugs (40, 42) having a maximum tread depth (D) as measured from a
5 radially outer surface of the elongated lug inwardly to an inner tread (13), the inner tread (13), in combination with the elongated lugs (40,42), form channels (60) to discharge soil, the tire (10) having a plurality of tread elements interposed between the elongated lugs (40, 42), the tread elements (80) having three or more sides (83,84,85,86) extending from the inner tread surface to a radially outermost surface, the surface having a maximum depth (d), (d) being less than (D), at
10 least one side (83,84,85 or 86) of the tread elements being substantially parallel to an adjacent elongated lug (40, 42), characterized in that the traction elements are positioned in an opening at an axially inner location (61) where the soil discharge channels (60) merge in the center portion of the tread (12).
2. The off-the-road tire (10) of claim 1 wherein one or more sides of the tread elements (80)
15 are radially inclined at an angle β , β being equal or greater than 8° .
3. The off-the-road tire (10) of claim 1 or 2 wherein the elongated lugs (40, 42) have curved leading edges (67) and trailing edges (68).
4. The off-the-road tire (10) of claim 1 wherein the tire (10) has blocks (44) and the inner tread (13), in combination with the elongated lugs (40, 42) and the blocks 44 form openings at
20 axially outer locations (62) to discharge soil, interposed in front of and substantially axially with these openings (62) are one or more tread elements (80) oriented to redirect or divert the discharging soil.
5. The off-the-road tire (10) of claim 4 wherein each traction element (80) has one side (83, 84, 85 or 86) having a concave curvature.
- 25 6. The off-the-road tire (10) of claim 2 wherein the radially outer surface (82) of the tread elements (80) occupies an area at least .25 square inches (mm^2).
7. The off-the-road tire (10) of claim 1 is an ATV tire.
8. The off-the-road tire (10) of claim 7 has a carcass (30) reinforced by a ply structure (38) having two or more bias angled plies.

REPLACEMENT
ART 34 AMDT

A problem commonly associated with these tapered knobs is that, while they resist expulsion of mud in some cases, they can actually clog the tread with mud in some clay-based soils.

A secondary problem is that the knobs have a radially outer surface area that is so small that, when placed in contact with a firm soil, the knobs tend to wear very quickly providing little or no tread wear enhancement.

A third problem is that the conical shape limits the utility of the knobs. Such knobs mainly a soil penetrating cleat without any meaningful soil biting edges to assist in traction enhancement.

An object of the present invention is to provided reduced height tread elements that provide a means for soil flow path diverting and increased traction edges for improved traction.

Another object of the invention is to provide the reduced height tread elements in a configuration that provides additional tread wearing surfaces while improving off-the-road traction.

A further object of the invention is to improve cornering stability by increasing the number of lug edges.

Disclosure of the Invention

Summary of the Invention

An off-the-road tire (10) having a radially outer tread (12) having a plurality of elongated lugs (40, 42) is disclosed. The elongated lugs (40, 42) have a maximum tread depth D as measured from a radially outer surface of the elongated lugs (40, 42) inwardly to an inner tread surface (13).

The off-the-road tire (10) has a plurality of tread elements (80) interposed between the elongated lugs (40, 42). The tread elements (80) have three or more sides (83, 84, 85 and 86) extending from the inner tread surface (13) to a radially outermost surface (82), the radially outermost surface (82) have a maximum depth d, d being less than D and, wherein at least one side of the tread elements (80) is oriented substantially parallel to an adjacent lug (40 or 42). The traction element (80) in a preferred embodiment additionally has at least one side (83, 84, 85 or 86) having a concave curvature. The concave curvature provides a means for redirecting or diverting the soil flow path when the tire is used in sloppy soil or snow.

The tread elements (80) has one or more sides (83, 84, 85, 86 and 87) radially inclining at an angle β , β being equal to or greater than 8° .

CLAIMS

1. An off-the-road tire (10) having a radially outer tread (12) having a plurality of elongated lugs (40, 42), the elongated lugs (40, 42) having a maximum tread depth (D) as measured from a radially outer surface of the elongated lug inwardly to an inner tread surface, the off-the-road tire

5 characterized by:

a plurality of tread elements interposed between the elongated lugs (40, 42), the tread elements (80) having three or more sides (83, 84, 85, 86) extending from the inner tread surface to a radially outermost surface, the surface having a maximum depth (d), (d) being less than (D), at least one side (83, 84, 85 or 86) of the tread elements being
10 substantially parallel to an adjacent elongated lug (40, 42).

2. The off-the-road tire (10) of claim 1 wherein one or more sides of the tread elements (80) are radially inclined at an angle β , β being equal or greater than 8° .

3. The off-the-road tire (10) of claim 1 or 2 wherein the elongated lugs (40, 42) have curved leading edges (67) and trailing edges (68).

15 4. The off-the-road tire (10) of claim 1 wherein the inner tread (13), in combination with the elongated lugs (40, 42), form channels (60) to discharge soil, interposed within these channels (60) are one or more tread elements (80) oriented to redirect or divert the discharging soil.

5. The off-the-road tire (10) of claim 4 wherein each traction element (80) has one side (83, 84, 85 or 86) having a concave curvature.

20 6. The off-the-road tire (10) of claim 2 wherein the radially outer surface (82) of the tread elements (80) occupies an area at least .25 square inches (mm^2).

7. The off-the-road tire (10) of claim 1 is an ATV tire.

8. The off-the-road tire (10) of claim 7 has a carcass (30) reinforced by a ply structure (38) having two or more bias angled plies.

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Michael [US/US]; 20 Glenside Drive, Munroe Falls, OH
44262 (US).

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(71) Applicant (*for all designated States except US*): **THE GOODYEAR TIRE & RUBBER COMPANY [US/US]**;
Department 823, 1144 East Market Street, Akron, OH 44316-0001 (US).

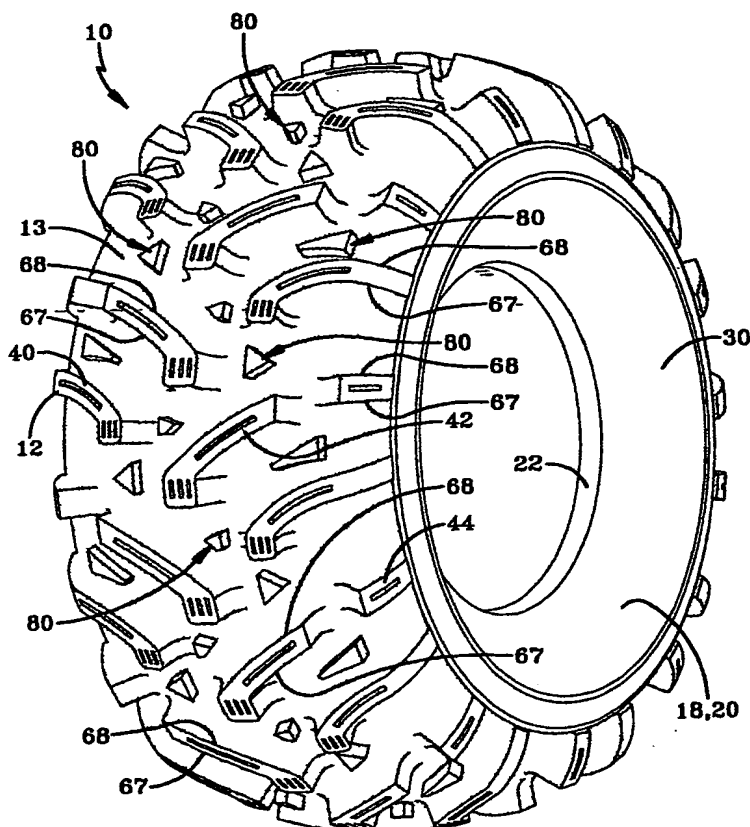
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(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **ROONEY, Timothy**,

[Continued on next page]

(54) Title: AN ALL-TERRAIN VEHICLE TIRE



(57) Abstract: An off-the-road tire (10) has lugs (40, 42) and blocks (44) which form soil discharge channels (60). Within each soil discharge channels (60) are shallow depth traction elements (80) designed to redirect a portion of the soil or mud in a way to increase traction of the tire (10).

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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X	GB 1 236 335 A (KLEBER-COLOMBES) 23 June 1971 (1971-06-23) page 1, left-hand column, line 37 -right-hand column, line 83; claims 1-4; figures page 2, left-hand column, line 16 - line 32	1,4
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☒ Further documents are listed in the continuation of box C.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Baradat, J-L

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